

Title (en)  
SOLID-STATE IMAGE CAPTURE DEVICE

Title (de)  
FESTKÖRPERBILDERFASSUNGSVORRICHTUNG

Title (fr)  
DISPOSITIF DE CAPTURE D'IMAGE À SEMI-CONDUCTEUR

Publication  
**EP 3404714 A4 20181212 (EN)**

Application  
**EP 16885039 A 20161125**

Priority  
• JP 2016005977 A 20160115  
• JP 2016085074 W 20161125

Abstract (en)  
[origin: EP3404714A1] A solid-state imaging device includes a plurality of pixels two-dimensionally arranged on a semiconductor substrate (71). Each of the pixels includes at least one shallow light receiving portion (11a, 11b) formed near a surface of the semiconductor substrate (71) and at least one deep light receiving portion (12) formed under the shallow light receiving portion (11). One or more (11b) of the shallow light receiving portions and the deep light receiving portion (12) are connected to each other so as to form a second light receiving portion (13). The rest (11a) of the shallow light receiving portions forms a first light receiving portion. Excess electric charge in the first light receiving portion is discharged to the deep light receiving portion (12).

IPC 8 full level  
**H01L 27/146** (2006.01); **H01L 31/10** (2006.01); **H04N 5/359** (2011.01); **H04N 5/369** (2011.01); **H04N 5/374** (2011.01)

CPC (source: EP US)  
**H01L 27/146** (2013.01 - US); **H01L 27/14647** (2013.01 - EP US); **H01L 27/14652** (2013.01 - EP US); **H01L 27/14656** (2013.01 - EP US); **H01L 31/10** (2013.01 - EP US); **H04N 25/62** (2023.01 - EP US); **H04N 25/70** (2023.01 - EP US); **H04N 25/76** (2023.01 - EP US); **H01L 27/14683** (2013.01 - EP US)

Citation (search report)  
• [XA] US 2011068429 A1 20110324 - VENEZIA VINCENT [US], et al  
• [X] US 2012146116 A1 20120614 - SATO MAKI [JP]  
• [XAI] US 2010220228 A1 20100902 - OTAKE YUSUKE [JP], et al  
• [X] WO 2015037547 A1 20150319 - SEKINE HIROKAZU [JP] & EP 2996149 A1 20160316 - SETECH CO LTD [JP]  
• See also references of WO 2017122436A1

Designated contracting state (EPC)  
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)  
BA ME

DOCDB simple family (publication)  
**EP 3404714 A1 20181121**; **EP 3404714 A4 20181212**; **EP 3404714 B1 20200101**; JP 6814748 B2 20210120; JP WO2017122436 A1 20181101; US 11289618 B2 20220329; US 2018323232 A1 20181108; WO 2017122436 A1 20170720

DOCDB simple family (application)  
**EP 16885039 A 20161125**; JP 2016085074 W 20161125; JP 2017561532 A 20161125; US 201816033478 A 20180712